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EX PARTE OR LATE FILED

March 5, 1997

William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Stop Code 1170  
Washington, D.C. 20554

RECEIVED

MAR 5 - 1997

Federal Communications Commission  
Office of Secretary

**Re: *Ex Parte* Presentation of Final Analysis Communication Services, Inc. in Amendment of Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service, IB Docket No. 96-220.**

Dear Mr. Caton:

Pursuant to Section 1.1206(a) of the Commission's rules, 47 C.F.R. § 1.1206(a), Final Analysis Communication Services, Inc. ("Final Analysis"), by its attorneys, hereby submits notice of its *ex parte* presentation in the above-captioned docket. On March 4, 1997, Final Analysis held an on-site tour of its corporate headquarters and ground station facilities at Lanham, Maryland. Staff from the Commission's International Bureau, and the Office of Engineering and Technology, as well as an international delegation visiting the FCC, attended the on-site tour.<sup>1</sup>

The tour centered on Final Analysis, Inc.'s non-voice, non-geostationary mobile satellite service ("NVNG MSS" or "Little LEO") operations authorized under an experimental license issued by the Commission, and included viewings of Final Analysis's experimental ground station operations at the Lanham facility and Final Analysis's experimental Little LEO satellite, FAISAT 2v, as it is being prepared for shipment to the

<sup>1</sup> Because of the lateness of the hour when the tour concluded, it was not possible to file this *ex parte* notice on the same day as required by Section 1.1206(a). As this *ex parte* notice is being filed on the next following business day, Final Analysis requests a *de minimis* waiver of Section 1.1206(a)'s same-day filing requirement.

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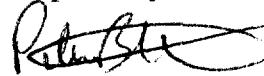
KELLEY DRYE & WARREN LLP

William F. Caton  
March 5, 1997  
Page 2

launch site. Background materials, copies of which are attached hereto, also were distributed to the tour members.

As required by Section 1.1206(a), the original and one copy of this notice and copies of the attached materials are being filed with the Secretary's office. If you should have any questions regarding this matter, please do not hesitate to call the undersigned.

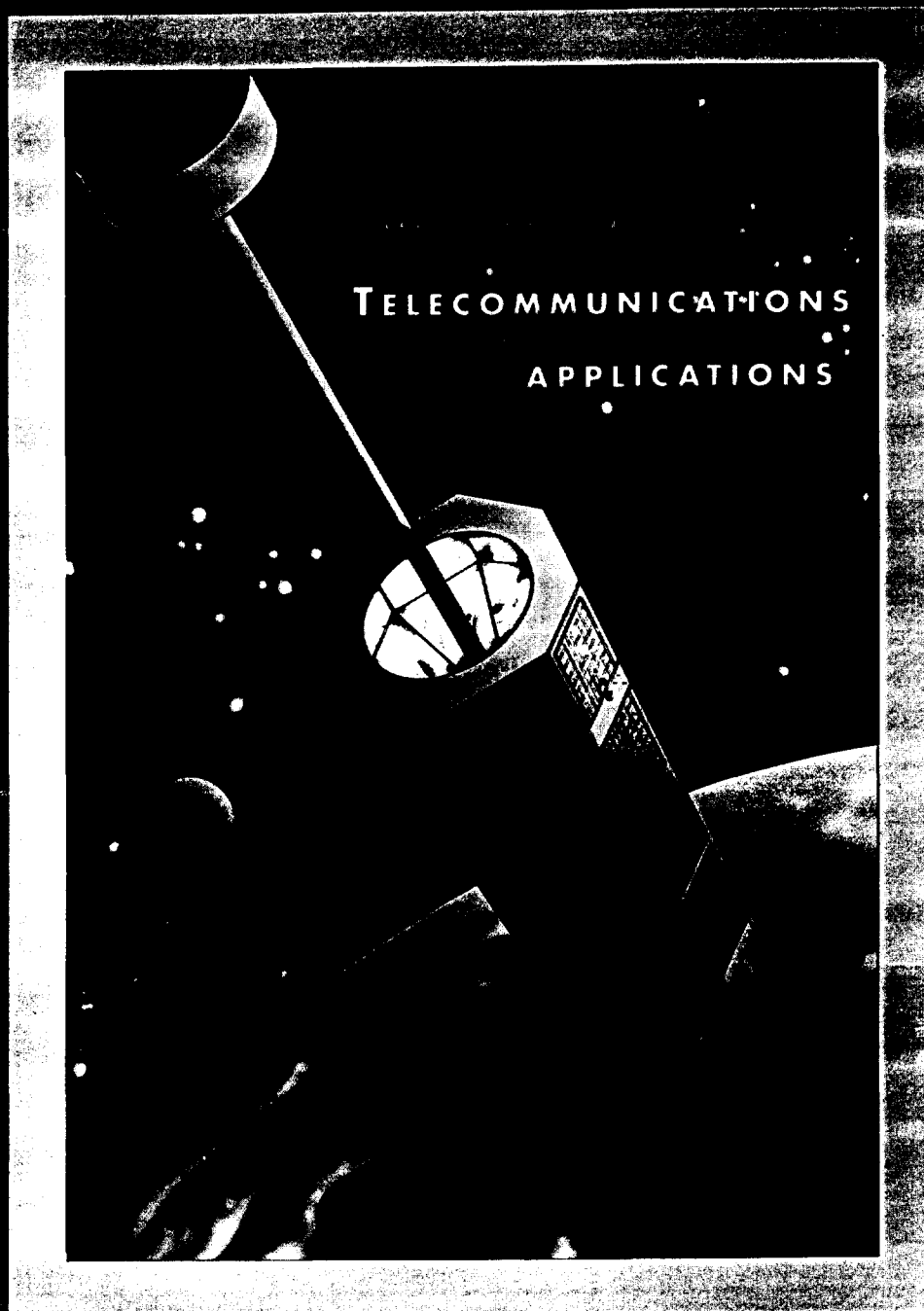
Respectfully submitted,

A handwritten signature in black ink, appearing to read "Peter Batacan", with a long horizontal flourish extending to the right.

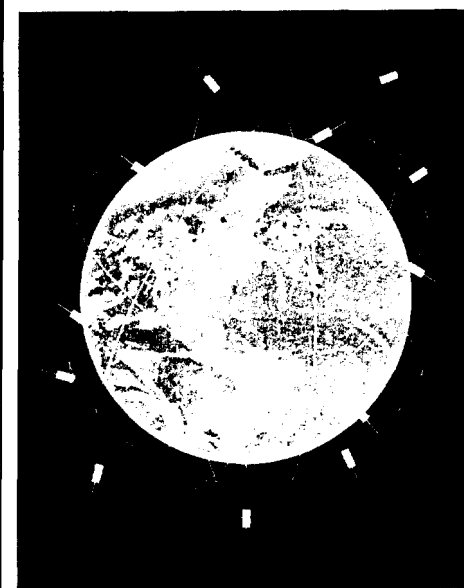
Peter Batacan  
Counsel to Final Analysis

cc  
w/o attachments: Tom Tycz  
Cassandra Thomas

# FINAL ANALYSIS COMMUNICATION SERVICES



TELECOMMUNICATIONS  
APPLICATIONS



**FACS has a long history in the development and support of sophisticated space technology in support of NASA and other government programs. In recent years, we have worked to harness this same technology to provide affordable, practical solutions for industrial and commercial use.**

**With each advance in sensor, satellite and computer technology, we have seen more and more opportunities to bring innovation to applications as far ranging as utility meter reading, environmental monitoring and pipeline monitoring.**

**FACS** systems and services feature a 26-satellite constellation that is supported by the FACS Master Ground Station. We offer both fixed and mobile terminals for customer use. FACS systems are designed specifically for applications that require two-way, non-voice digital and alphanumeric messages. By focusing on these requirements, we are able to offer sophisticated technology at low cost.

By tapping FACS resources, you are assured the power of the state-of-the-art in both satellite technology and store-and-forward communications. Each implementation is by experienced professionals who are attentive to your schedule goals and responsive to your needs.

We understand that satellite deployment is not a total solution. To effectively acquire, store and transmit data, our customers demand a range of applications packages and ground options. FACS can provide simple integration

modules ranging from small remote terminals to full ground stations for collection of near real-time data.

If you need reliable access to field data and assured transmission integrity for the valuable information you are generating, FACS has just the right package. We help you balance communications capability, data integrity and system quality with affordable cost in order to provide you with a wide range of options for automating your operations.

The FACS approach to satellite services and applications engineering is simple and straightforward. Our design engineering experts bring years of experience in the spaceflight industry in working with FACS applications engineers who are expert in creating practical solutions.

Final Analysis  
is about to change  
the way you  
do business.

Industry need for satellite capability has existed for years, but all of the technology implementations were designed for a complex set of user needs—usually scientific or military. The capability was overkill and the costs were prohibitive. With the launch of our FAISAT satellites, we can put this technology in your hands at an affordable price.

FACS systems give users unprecedented access to sites that are remote and unattended. We provide easy to operate remote terminals that can be easily interfaced directly to the devices to be "read" by the FAISAT satellite, or handheld message terminals for mobile use. FACS applications packages include:

**Data Acquisition and SCADA** for utility, oil & gas and environmental monitoring. Traditionally, remote site monitoring has been a highly labor intensive and very costly activity for

A FACS system enables utility users to streamline their operations, reduce personnel costs, collect data faster, obtain complete field readings every month and improve billing accuracy.

Pumping stations, wells, storage facilities, power generating equipment, pipelines, electrical transmission lines, remote transformers, energy load management and meter reading and control equipment are often distributed over vast geographical areas that include remote locations. Today these facilities are monitored by technicians who report findings via phone, microwave radio or VSAT. In addition to tremendous savings in monitoring costs, these companies can expect to realize large savings in maintenance costs and improved handling of widely dispersed assets.

Worldwide there are hundreds of thousands of monitoring stations for collecting data from numerous, often remote, sensors for the purpose of assessing soil, water, and climate conditions, ocean surveillance, weather forecasting and geological surveyance. Recently enacted environmental regulations will add millions of new sensors within the next few years.

Data for all these applications can be collected by a FACS system and be transmitted to a FACS Ground Station for processing and delivery to the subscriber. FACS' low cost services will make it practical to fully automate the data collection and problem identification process. The return on investment numbers are very attractive and assure significant long term savings and more efficient operations.

**Tracking Services** for transportation asset management and cargo tracking. A FACS system can improve control of valuable mobile equipment and cargo. There are millions of long haul tractor trailer trucks and medium over-the-road commercial vehicles worldwide. In this industry, there is a growing trend among trucking companies to install messaging and position location systems in their vehicles and dispatch centers to provide accurate information for more effectively managing their fleet. Truck mounted remote terminals and service charges for two-

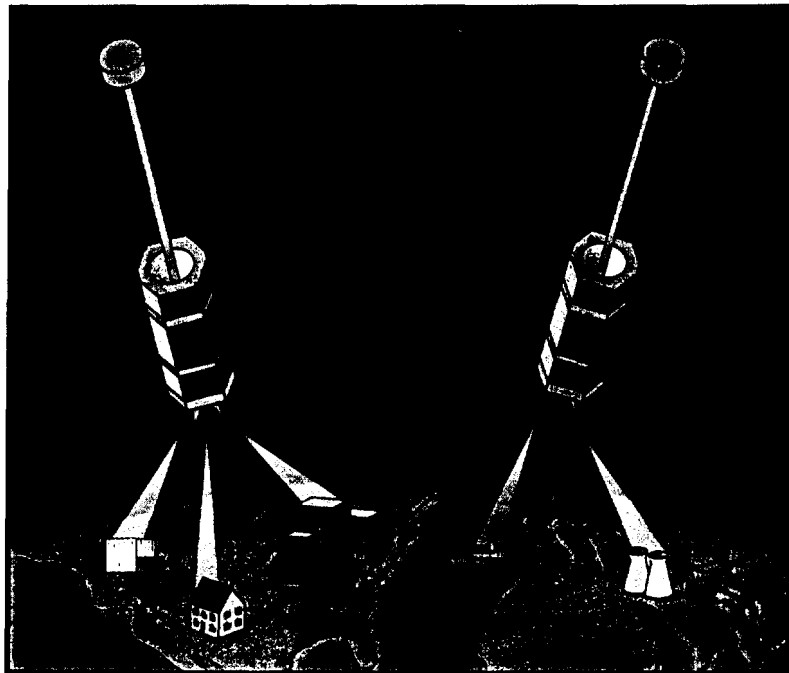
way messaging and position fixing from geostationary satellite services are expensive and require complicated gear for access. FACS simplifies matters at a lower cost, and can be used for locating any type of vehicle whether it be a railroad car or barge.

Application packages are also available for the tracking of containers, valuable cargo and hazardous materials.

**Message Services** for remote area communications, emergency ser-

vices, and two-way paging. Millions of people around the world are on the move every day. Cars break down, accidents happen, boats are stranded, sportsmen lose their way or need emergency assistance in remote areas. For situations where CB radio, telephone or other communications devices are not an option, FACS offers a totally reliable means to communicate distress situations with precise location information.

## How It Works



The FACS system offers both passive and interactive field devices which will receive and transmit data commands and data messages. Remote Terminals are passive and are interfaced to the device to be monitored. These compact, low power units monitor, track and accumulate data on the ground for transmission to the satellite and subsequent collection and distribution. Operation

is completely transparent and provides fast, accurate retrieval of data regardless of physical location.

The interactive Message Terminal is designed to initiate action by signaling the satellite via a frequency beacon. Message lengths are selectable. Messages can be re-broadcast immediately to another user.

# FINAL ANALYSIS



## Standard Features

All FACS Systems offer a long list of standard features including:

- Simple Interface to Field Devices
- Compact, Lightweight, Modular Design
- Two-way Communications
- Full Store & Forward Communications
- Unlimited Field Population
- Compliance with Standards
- Automatic Backup & Restore
- Field-proven Software

## Benefits

All FACS Systems are complete field management solutions with extensive benefits for the user:

- Single Solution
- Economical Status Monitoring
- Increased Productivity
- Increased Accuracy & Reliability
- Greater Control over Data Records
- Easy Remote Area Servicing
- Early Problem Alert
- Ability to Upgrade/Expand
- Dramatic Cost Savings
- Reduced Maintenance Costs

FACS offers a capability unsurpassed in the satellite communications business. We welcome the opportunity to discuss your needs. We will work with you to define a subscriber package that meets both your data requirements and your budget.

## The System

Standard FACS Systems include:

- Compact Remote Terminals (field-installed) or Handheld Message Terminals
- Desktop User Station
- Schedule Software
- Customized Data Delivery Package

FACS can also provide users with a complete standalone Subscriber Ground Station package that includes an antenna, tracking and telemetry system, PC-based monitoring station and printer.

## Support

While our monitoring system offers standard off-the-shelf flexibility, each system is configured to meet your monitoring and data collection requirements and each integrated system is fully supported by FACS. We provide System Support Plans that include HOTLINE telephone support and consultation, system and manual updates and enhancements and field bulletins.

## Upgradeability

FACS offers users the ability to expand the system to meet growth requirements. There is no limit to the number of field terminals that can be used with this system.



*Final Analysis*  
Communications Services, Inc.  
7500 Greenway Center  
Greenbelt, Maryland 20770  
Phone 301-474-0111  
Fax 301-474-3228

A Final Analysis Company



**FAISAT - COSCON™**

**A Strategic Alliance for  
Global Mobile Personal Communications  
by Satellite (GMPCS)**



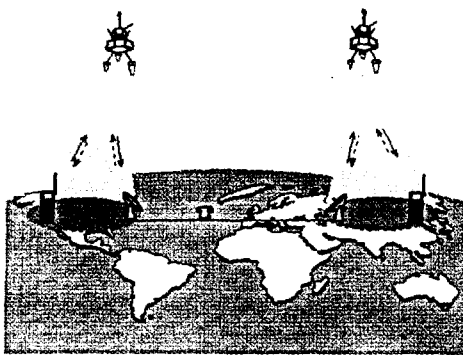
Final Analysis, an American pioneer in small satellite technology, and Russia's POLYOT Design Bureau, one of the world's largest aerospace companies, have formed a strategic alliance to bring the benefits of space age technology to all nations of the world. This American-Russian alliance brings the resources of these two companies together to manufacture and deploy a commercial satellite constellation and harness the power of these satellites to bring unprecedented coverage to a wide range of industries. Plus, the FAISAT - COSCON alliance allows access anywhere in the world at low cost—in terms of both ground equipment and subscriber transmission rates.

FAISAT - COSCON welcomes service providers worldwide to participate in this exciting new venture and provides them the opportunity to bring 21st century technology to their countries today.

The FAISAT - COSCON constellation features low earth orbit satellites (1000 km altitude) and its satellites are designed to support both mobile and fixed communications. FAISAT - COSCON systems are ideal for applications that require two-way, digital and alphanumeric messages. FAISAT - COSCON delivers the state-of-the art in both satellite technology, near realtime, and store-and-forward communications.

If you need reliable access to field data and assured transmission integrity for the valuable information you are generating, FAISAT - COSCON is the solution. Our approach to satellite applications is simple and straightforward. Our design engineers bring years of experience in the spaceflight industry in working with our applications engineers who are expert at creating practical solutions.

Industry need for satellite capability has existed for years, but all of the technology implementations were designed for a complex set of users—usually scientific or military. The capability was over-designed for commercial use and the costs were prohibitive. FAISAT - COSCON puts this technology in your hands at an affordable price.



### **Messaging**

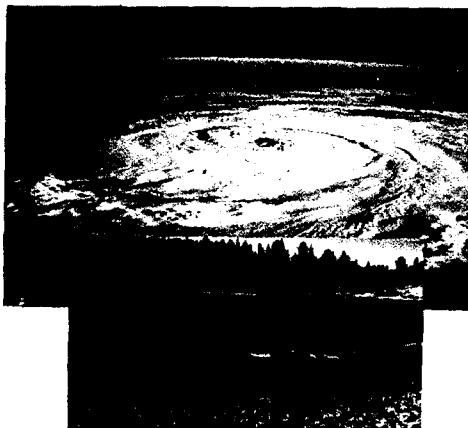
Messaging services are provided for e-mail, one and two-way alpha-numeric global paging, remote area communications, and emergency services. Millions of people are on the move every day around the world. Vehicles break down, accidents happen, boats are stranded, sportsmen lose their way or need emergency assistance in remote areas. For situations where radio, telephone or other communications do not provide adequate geographic coverage, FAISAT - COSCON offers a totally reliable means to communicate with precise location information. With a FAISAT - COSCON system you are assured full global coverage. There are no usage restrictions.



### **Tracking**

Tracking services are available for transportation asset management and cargo and hazardous material tracking. FAISAT - COSCON can improve control of valuable mobile equipment and materials. There are millions of long haul tractor trailer trucks and medium over-the-road commercial vehicles worldwide. FAISAT - COSCON outperforms the geostationary satellite-based systems in use today for two-way messaging and position fixing. The FAISAT - COSCON system is simpler, smaller, and lower cost, and can be used to locate any type of vehicle—trucks, railroad cars, barges.

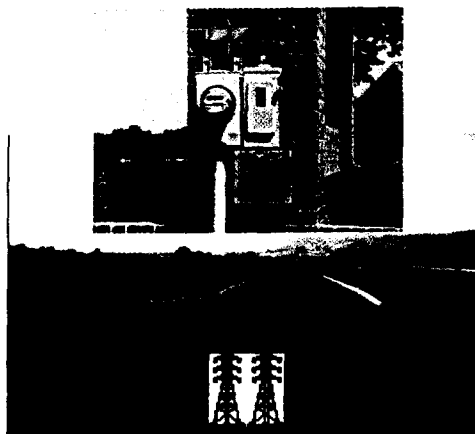
FAISAT - COSCON also supports applications for the tracking of containers, valuable cargo and hazardous materials.



### **Environmental Monitoring**

Environmental monitoring using a FAISAT - COSCON system can serve the hundreds of thousands of monitoring stations worldwide to collect data from the numerous remote sensors used to assess soil, water and climate conditions. FAISAT - COSCON brings value to ocean surveillance, weather forecasting and geological survey applications, as well. New environmental regulations will add millions of new sensors to this population within the next five years.





### **SCADA & Data Acquisition**

SCADA and Data Acquisition for water and power utilities, oil & gas providers and environmental monitoring agencies can be provided by FAISAT - COSCON. Traditionally, remote site monitoring has been a highly labor intensive and very costly activity for these industries. A FAISAT - COSCON system enables utilities to streamline their operations, collect data faster, obtain readings more frequently and improve their overall billing accuracy.

The FAISAT - COSCON approach is ideal for monitoring pumping stations, wells, storage facilities, power generating equipment, pipelines, electrical transmission lines, remote transformers, energy load management and meter reading and control equipment, all of which are often distributed over vast geographic areas. FAISAT - COSCON outperforms the land-based systems, microwave radio and VSAT systems being used today. In addition to tremendous savings in monitoring costs, these industries can expect to realize large savings in maintenance costs and improved handling of widely dispersed assets.

### **Benefits**

Data for all these applications can be collected by a FAISAT - COSCON system and transmitted directly to subscriber handheld terminals or their Ground Stations, or to our Ground Stations for processing and delivery to subscribers. A low cost FAISAT - COSCON system makes it practical to fully automate the data collection and problem identification process. The return on investment is very attractive and assures significant long term savings and more efficient operations. FAISAT - COSCON covers all geographic areas with precision. With the full constellation, it will enable near realtime communications.

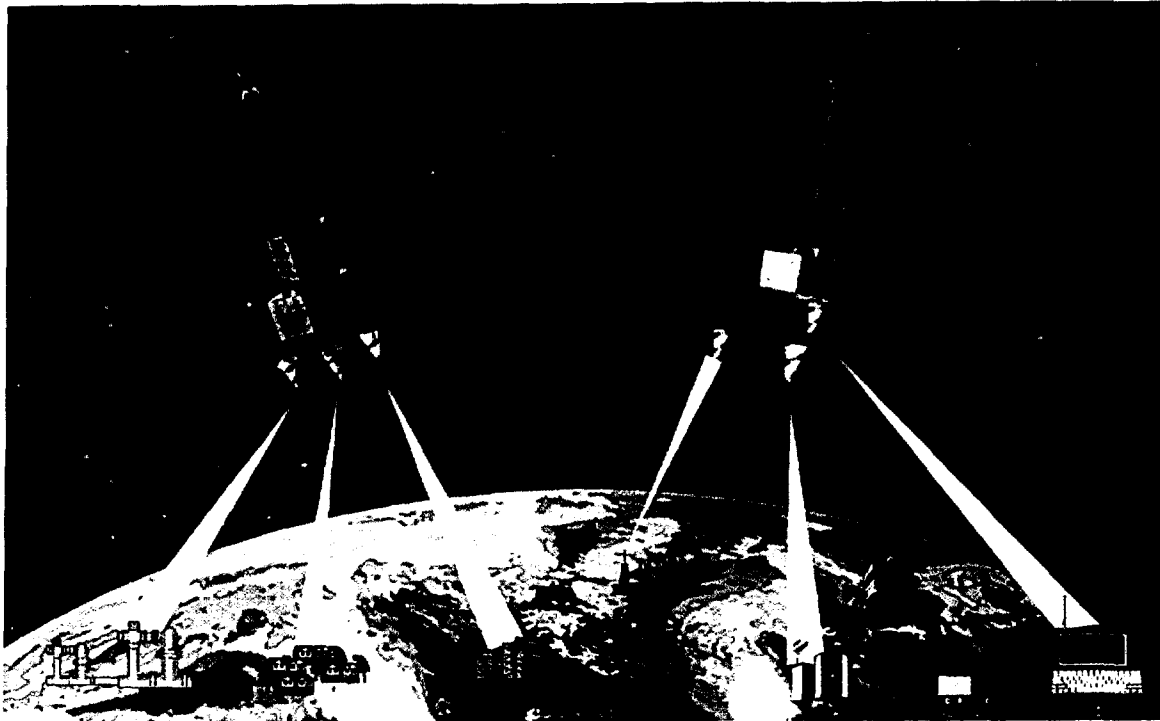
FAISAT - COSCON is a complete field management solution with extensive user benefits: economical status monitoring, increased productivity, increased accuracy and reliability, greater control over data records, easy remote area servicing, early alert to field problems and equipment malfunctions, dramatic cost savings, and reduced field maintenance costs.

This new service means greater personal safety for travelers, greater security against cargo and mobile asset theft and more efficient tracking on land and at sea. FAISAT - COSCON provides a more effective approach to natural resource conservation and greater cost savings and data management efficiency for public and private industries.

The FAISAT - COSCON system outperforms current delivery systems in quality, reliability and cost effectiveness.

## **DUAL CONSTELLATIONS PROVIDE 200% GLOBAL COVERAGE FOR RELIABLE, CONTINUOUS DIGITAL TELECOMMUNICATIONS**

<b>FAISAT</b>	<b>COSCON</b>
<ul style="list-style-type: none"> <li>• 26-Satellites</li> <li>• Polar and Mid-Inclination Orbits</li> <li>• 1000 km</li> <li>• 5000 km Footprint</li> <li>• 95% Realtime Coverage</li> <li>• 150% Global Coverage</li> </ul>	<ul style="list-style-type: none"> <li>• 32-Satellites</li> <li>• Mid-Inclination Orbits</li> <li>• 1000 km</li> <li>• 5000 km Footprint</li> <li>• 95% Realtime Coverage</li> <li>• 150% Global Coverage</li> </ul>



#### **How It Works**

The FAISAT - COSCON systems offers both passive and interactive field devices for receiving and transmitting data commands and data messages. Remote Terminals are passive, and are interfaced to the device/sensor to be monitored. These compact, low-power units monitor, track, and accumulate data on the ground for transmission to the satellite, for subsequent collection and distribution. Operation is completely transparent to subscribers and provides fast, accurate retrieval of data regardless of physical location. The interactive Message Terminal is designed to initiate action by signaling the satellite via a frequency beacon. Message lengths are selectable and can be re-broadcast immediately to another user.

#### **Special Invitation to Service Providers**

Service Providers are invited to join the FAISAT - COSCON Alliance in bringing this capability to all corners of the globe. Final Analysis brings the best in American entrepreneurship and innovation. POLYOT brings a 50-year legacy as one of the foremost scientific-industrial enterprises in the world. Together, with our service provider organizations, we will usher in a new era in international trade based on this exciting new satellite technology. Final Analysis and POLYOT are actively seeking service providers to participate in frequency sharing testing and applications trials to commence in early 1997. Joint venture and/or licensing opportunities for national or regional service provision are available outside the USA and Russia.

FAISAT - COSCON offers a capability unsurpassed in the satellite communications business. We welcome the opportunity to discuss FAISAT - COSCON opportunities with service providers anywhere in the world.



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**POLYOT**

Design Bureau  
226 B. Khmel'nitskogo St.  
Omsk - 21, 644021 Russia  
Telephone: +7(3812) 371-776  
Fax: +7(3812) 579-200



*Infosat System: A LEO Constellation Providing Global Data  
Communication Services*

*System Overview Briefing*

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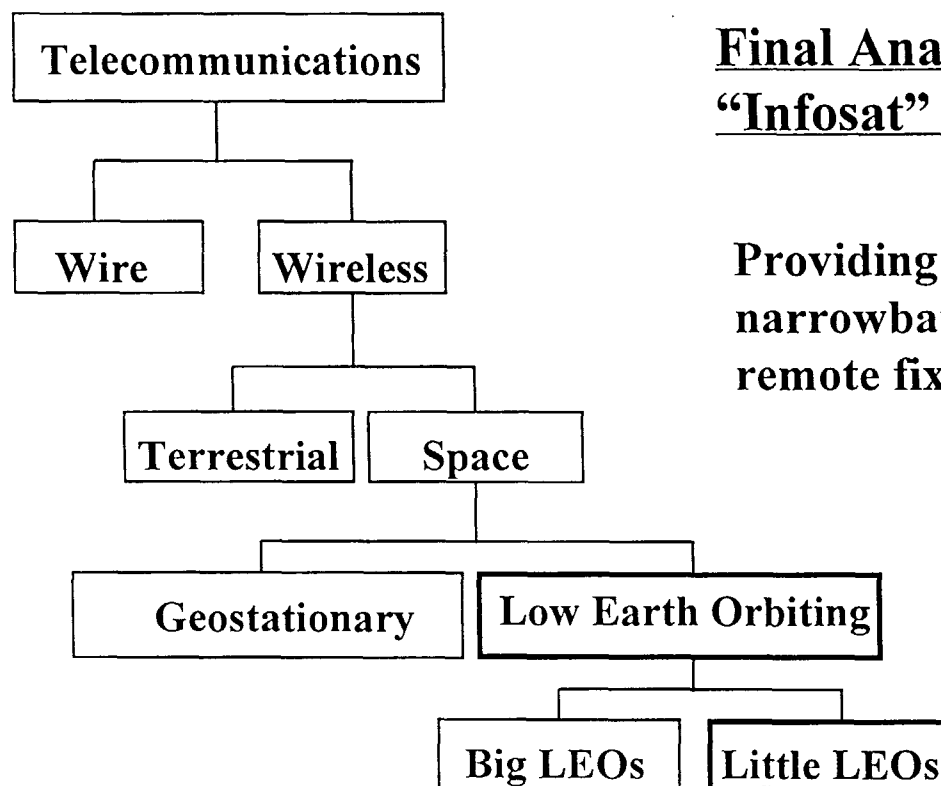
March 3, 1997

# What is the Final Analysis System?

## Our Vision

To be the non-voice, digital data wireless communication system of choice for US and international industrial, environmental and scientific, and government organizations, providing reliable, flexible, and low cost two-way monitor and control communications to field systems throughout the world. We will be user, industry, and national interest friendly in our global offering, teaming with and supporting federal and industry partners in each sovereign nation.

# A Niche Telecommunications System



## Final Analysis Communication Services “Infosat” System:

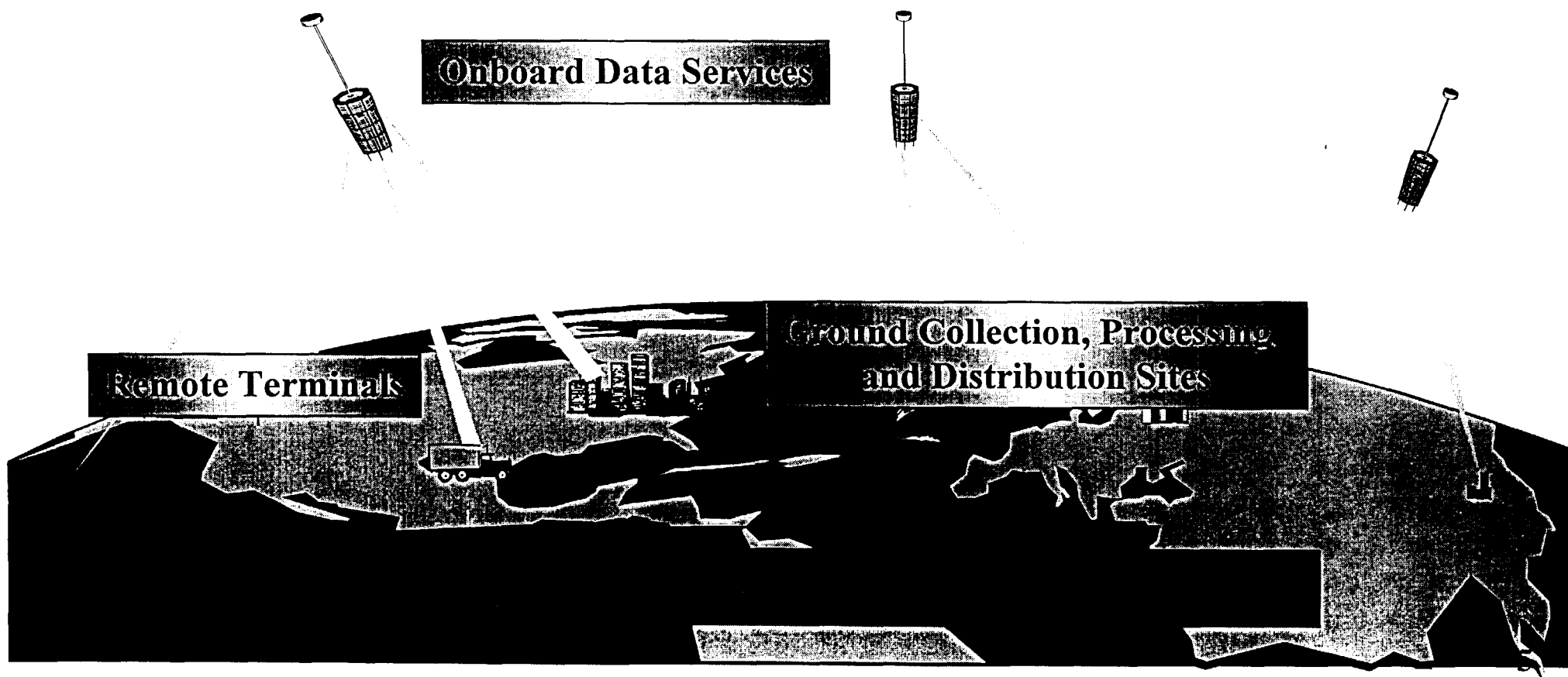
Providing low cost, global, store and forward, narrowband, digital data communications to remote fixed and mobile assets.

# Much Different Than Big LEOs

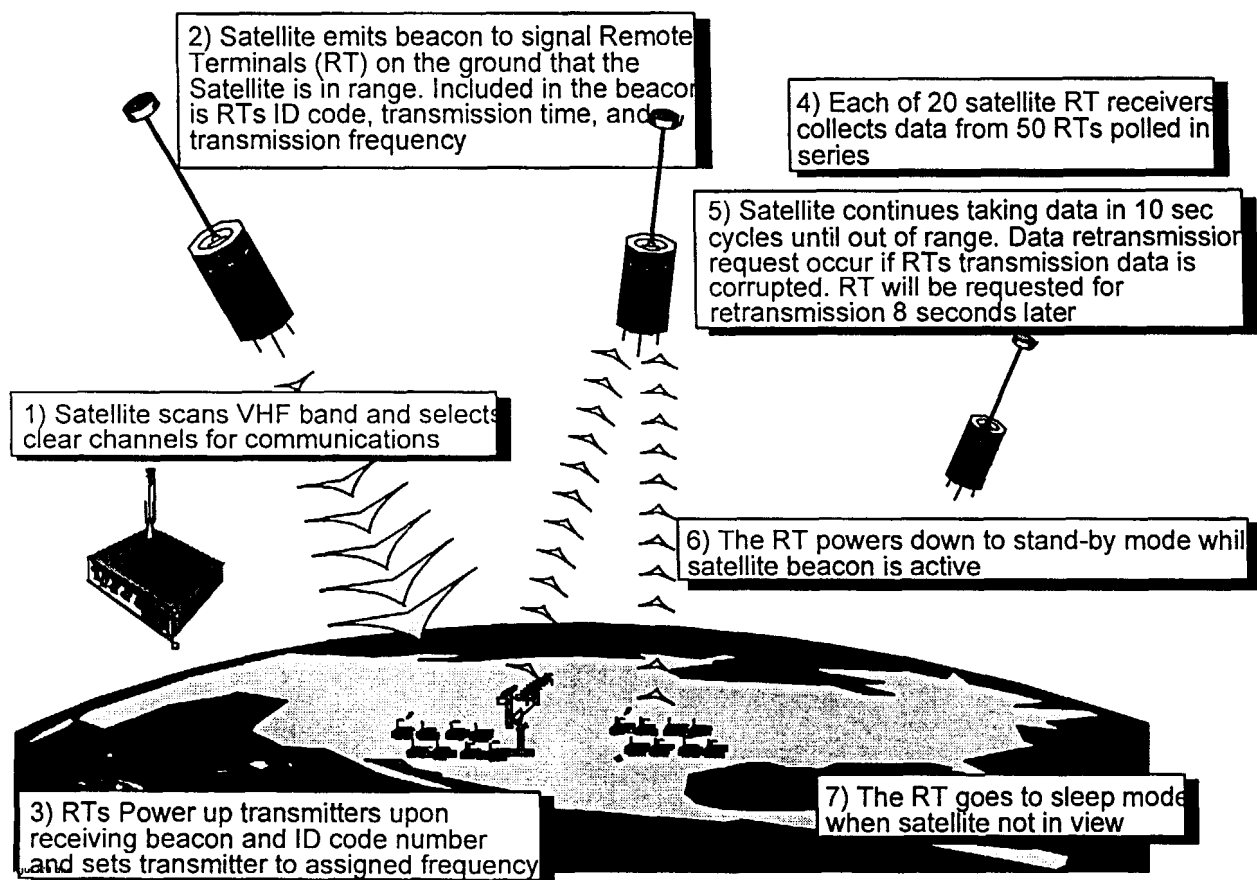
Attribute	Big LEOs	Little LEOs
Service	Voice & Data, Real-Time Bentpipe Mode	Data & Voice Mail, Near Real-Time Store & Forward
	Satellite-Satellite & Satellite-Ground Switching	Satellite-Ground Switching
Frequency	1.6 to 6, 19, 23 & 29 GHz	130 to 460 MHz
System Cost	\$2 to \$4B	\$150 to 300M
Price		
- Terminal	\$700 to \$2500	\$100 to \$500
- Service Fee	\$1 to \$3/min	\$0.25 to \$0.50/message

# Provided by a LEO Constellation

FAISAT is a 26-satellite constellation of low earth orbiting (LEO) satellites, and the associated ground systems and operations.

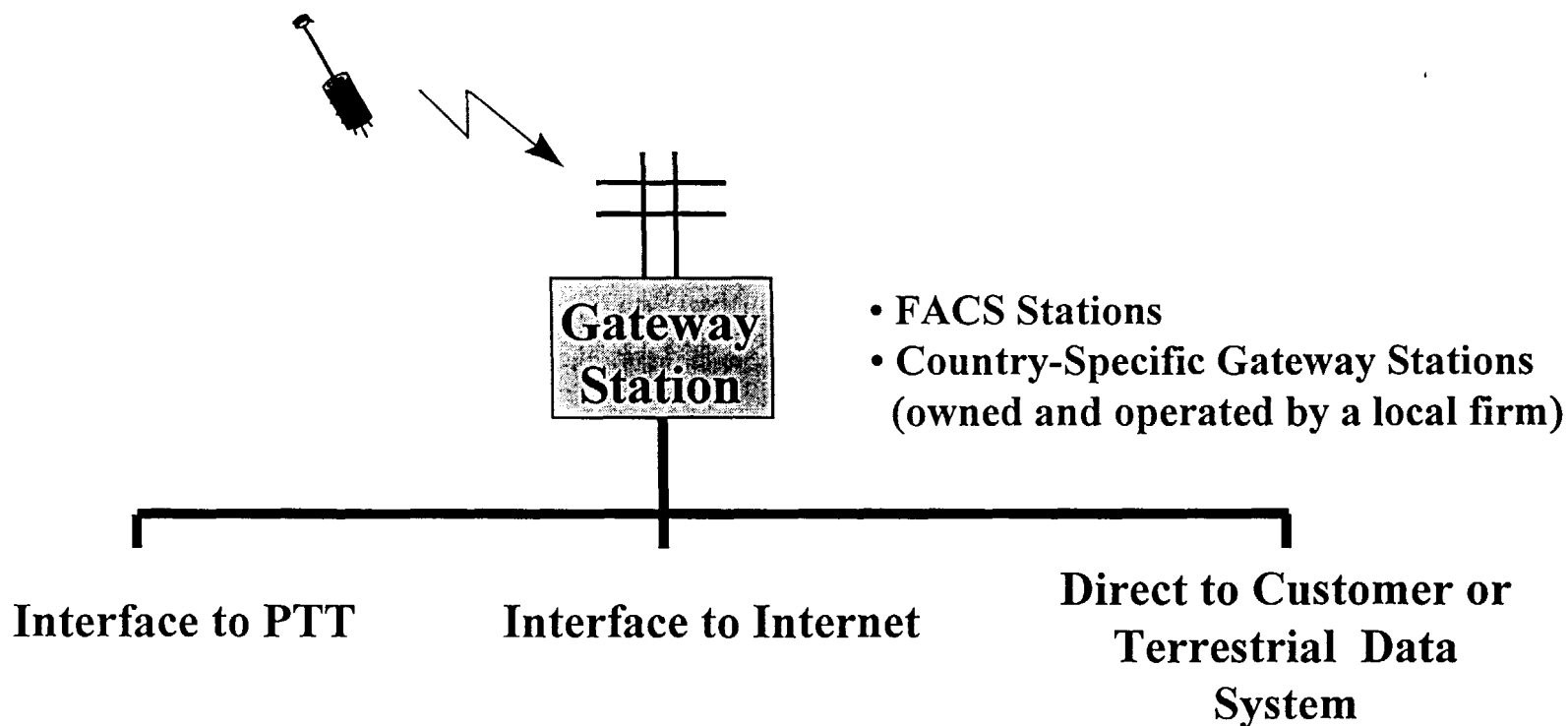


# Collecting Short Data Packets





# For Store and Forward to Ground Gateway Stations



# A System With Clear Advantages

<b>Reliable</b>	<ul style="list-style-type: none"> <li>• Data integrity (forward error correction)</li> <li>• Redundancy in satellite coverage</li> <li>• Disaster Resilient</li> </ul>
<b>Flexible</b>	<ul style="list-style-type: none"> <li>• Anything can be read</li> <li>• Flexible read rates</li> <li>• On-demand changes</li> </ul>
<b>Easy To Expand</b> <ul style="list-style-type: none"> <li>- To new service areas</li> <li>- To new information needs</li> </ul>	<ul style="list-style-type: none"> <li>• No infrastructure development or costs</li> <li>• No geographical boundaries</li> <li>• Terminal can go anywhere</li> <li>• Any digital data</li> </ul>
<b>Easy To Reconfigure</b>	<ul style="list-style-type: none"> <li>• Terminals can be reassigned to new applications</li> <li>• Terminals can be easily upgraded (s/w control)</li> </ul>
<b>Scaleable</b>	<ul style="list-style-type: none"> <li>• Scaleable from 1 to millions of units (same price point)</li> </ul>
<b>Low Cost</b>	<ul style="list-style-type: none"> <li>• Terminal and Service Rate</li> </ul>

# The System Elements

## Space Segment:

- 26 operational satellites
- 4 in-orbit spare satellites

## Operations Segment:

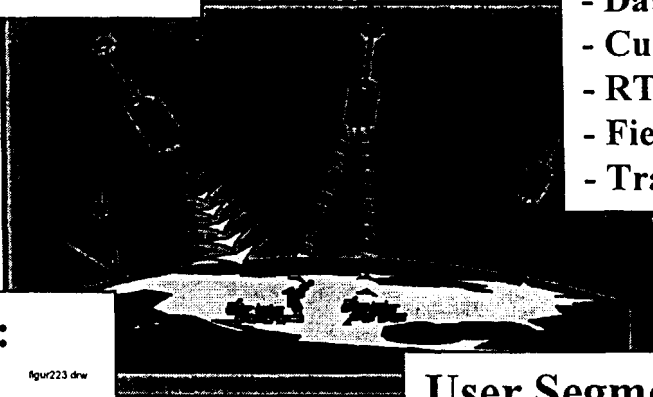
- Constellation System Operations
- Data Messaging Operations
- Customer Service
- RT Integration Services
- Field Maintenance Services
- Training Services

## Ground Segment:

- Master Ground Station
- Network Control Center
- Secondary Ground Station

## User Segment:

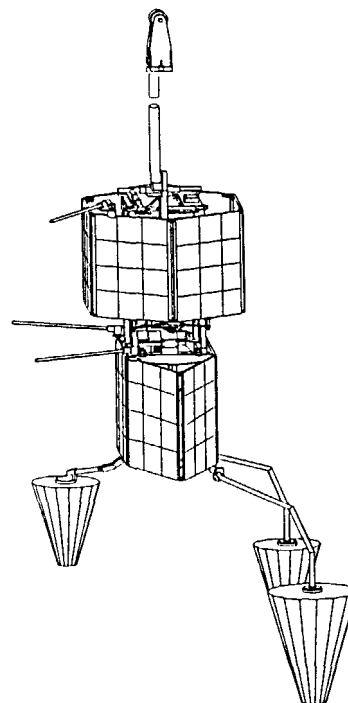
- Remote Terminals
- Messaging Terminals
- Customer-Unique Collection Stations



# The Satellites

- ◆ Applied bus technology
- ◆ Simple design
- ◆ Fully redundant (except OBC)
- ◆ Custom radio technology
- ◆ Custom flight s/w technology

- Structure
- Power Subsystem
- Attitude Control & Determination Subsystem
- Command and Data Handling
- Thermal Subsystem
- Communications Subsystem



- ◆ Lifetime: 60 months
- ◆ Probability of Success: 0.90

# The Orbits

- ◆ Altitude: 1000 km (low earth orbit)
- ◆ Inclination: 83 and 66 degrees
- ◆ Period: 105 minutes
- ◆ Satellite Distribution:
  - Four planes of 6 (plus 1 spare) satellites (66 deg. I)
  - Two planes of 1 satellite (83 deg. I)

Figure II-2 Final Analysis Constellation in Orbit

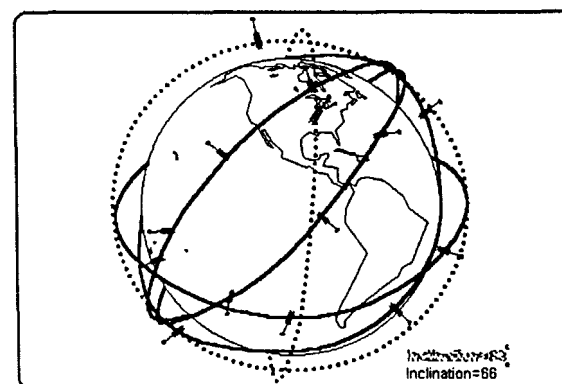
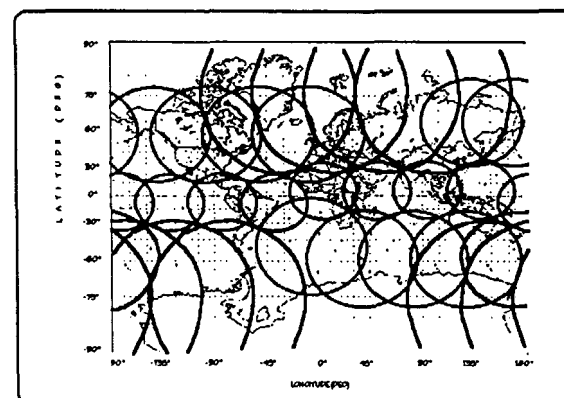
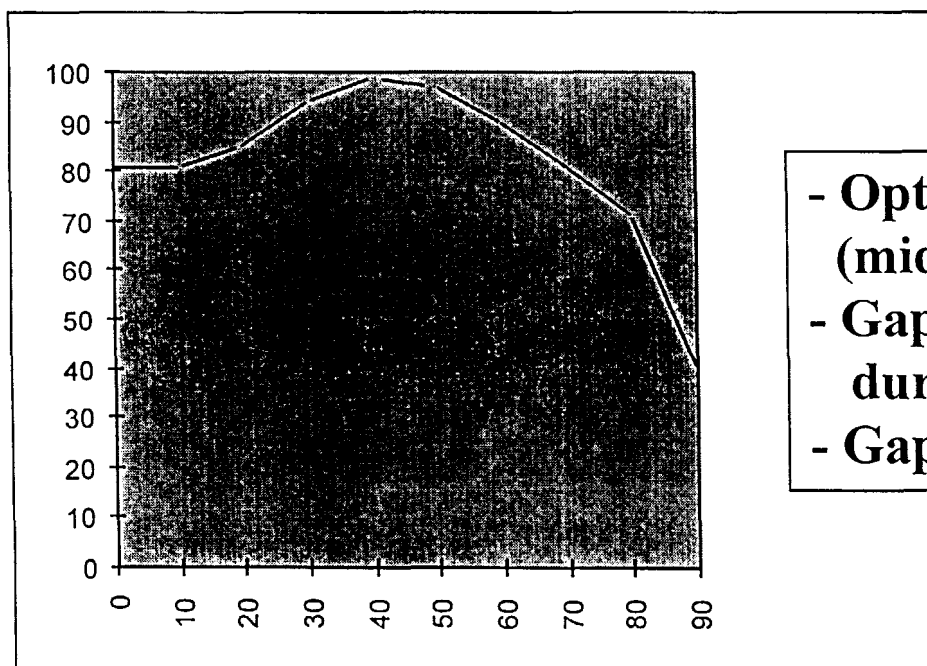


Figure II-3 Final Analysis Constellation Footprint Coverage



II-5

# Providing Global Near Realtime Coverage



- Optimized for populated land masses (mid-latitude regions)
- Gaps in mid-latitudes are of short duration (1 to 2.5 minutes)
- Gaps are predictable

# Coverage Growth

# of Overhead Passes (approx. 10 Mins)

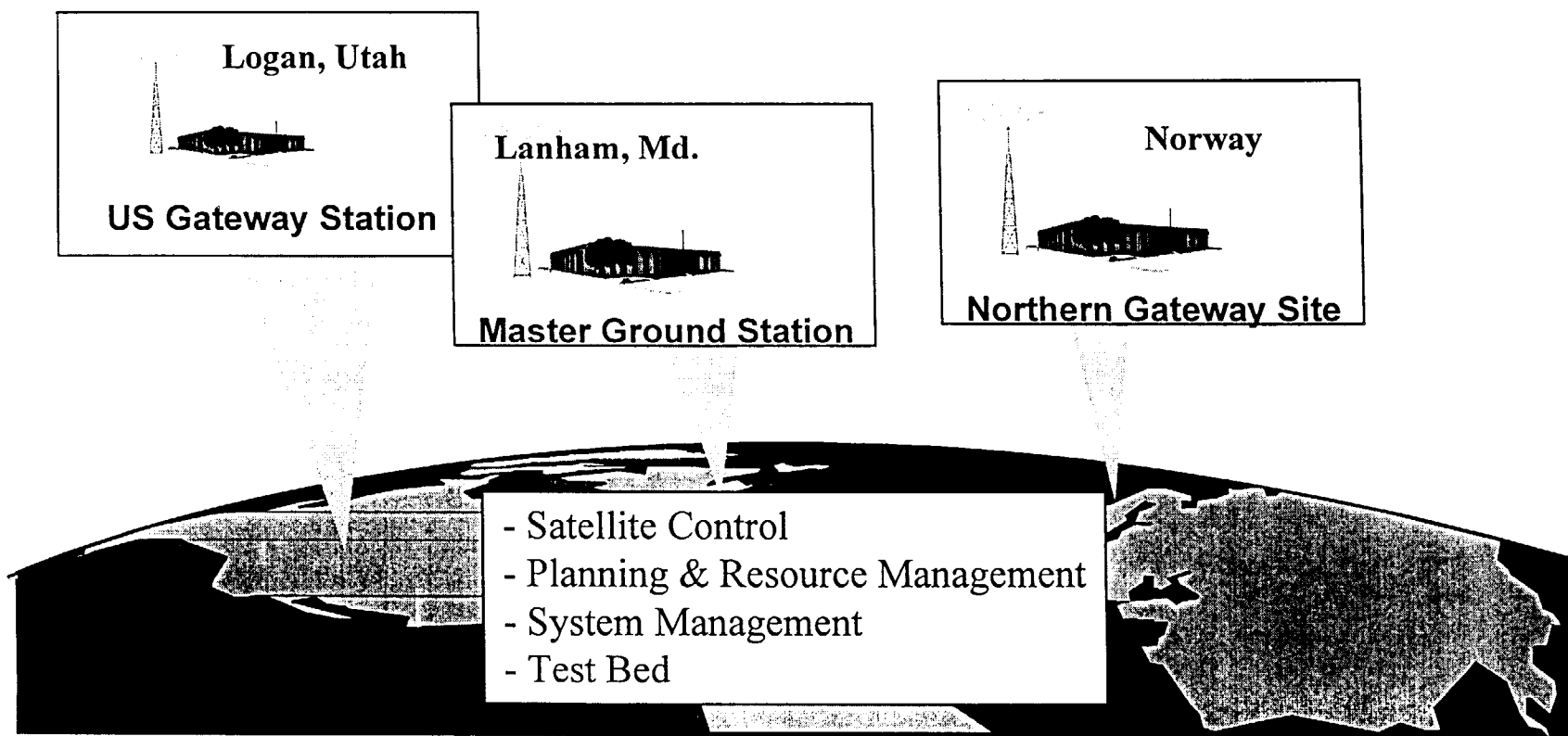
Latitude	2v (83i)	96 Total	1A (83i)	2 (83i)	97 Total	3-8 (66i)	98 Total
0	4	4	4	4	16	24	40
20	4.3	4.3	4.3	4.3	17.2	26	43.2
40	4.8	4.8	4.8	4.8	19.2	29	48.2
50	6.5	6.5	6.5	6.5	26	39	65
60	8	8	8	8	32	48	80

Latitude	10-15 (66i)	99 Total	17-22 (66i)	00 Total	24-29 (66i)	01 Total
0	24	64	24	88	24	112
20	26	69.2	26	95.2	26	121.2
40	29	77.2	29	106.2	29	135.2
50	39	104	39	143	39	182
60	48	128	48	176	48	224

Satellite is capable of communicating with over 50,000 terminals per satellite pass

# The Ground Segment

## Constellation Infrastructure: Initial Capability



Additional Sites Planned



# The Ground Segment

## The Service Infrastructure

